

## Chapter 5

---

### URETHRITIS AND CYSTITIS IN FEMALES

On clinical grounds alone, urethritis in women is often difficult to distinguish from cystitis or vaginitis. These infections all produce a variety of overlapping symptoms, including dysuria, urgency, frequency, hesitancy, dyspareunia, or abnormal vaginal discharge. Therefore, the physical examination and laboratory tests are crucial in establishing the diagnosis.

#### ETIOLOGY

The most common sexually transmitted agents producing acute urethritis in women are *Chlamydia trachomatis*, *Neisseria gonorrhoeae*, and herpes simplex virus. All three of these agents also commonly infect the cervix; thus, patients may have manifestations of cervical infection as well. *Candida* and trichomonas, which cause vaginitis, may also be isolated from the urethra of women, but are not usually considered causes of urethritis. *Escherichia coli*, *Staphylococcus saprophyticus*, and *Proteus mirabilis* cause most cases of cystitis in women.

#### CLINICAL MANIFESTATIONS AND DIAGNOSIS

##### History

Young, sexually active women who visit an STD clinic or similar health care setting and complain of dysuria or other urinary symptoms should be evaluated for

- urethritis,
- cystitis,
- vaginitis and cervicitis, or
- genital ulcer disease (particularly herpes).

The clinical symptoms may be helpful in suggesting which of these entities is present and Table 5-1 summarizes this information. Many women with vaginitis or herpes will have symptoms of “external” dysuria; that is, burning felt on the labia when the stream of urine is passed. Women with true urethral infection (urethritis) or urinary bladder infection (cystitis) more often have “internal” dysuria, that is, dysuria felt deeper inside the body. Women with bladder infections will also more likely have symptoms of frequency, urgency, gross hematuria, or a history of previous cystitis. Conversely, the presence of concomitant vaginal discharge and/or odor in a woman with dysuria suggests cervicitis and/or vaginitis.

Acute onset of symptoms and short duration of symptoms (<4 days before seeking treatment) also favor a diagnosis of cystitis, whereas a history of gradual onset and long duration of symptoms (>7 days) before seeking therapy suggest urethritis or vaginitis.

##### Examination

The urethral examination may be normal in women with urethritis due to gonorrhea (GC) or chlamydia (CT) or may show erythema or an exudate. Urethral lesions or inflammation may accompany herpes simplex virus (HSV) infection, and signs of cervical or labial HSV infection are often

also present (see Chapter 9 for further information on genital ulcer diseases). Suprapubic or bladder tenderness are signs suggestive of cystitis. Findings typical of vaginitis and cervicitis are described more fully in Chapter 6.

## **LABORATORY**

### **Microscopic urinalysis**

Evaluation should usually include a microscopic urinalysis. Collection of a “clean catch” midstream urine specimen is critical, so it is necessary to instruct the patient on a careful clean-void collection technique. A midstream urine specimen showing pyuria in a centrifuged specimen, usually defined as  $>10$  PMNs/400X high-dry field (often with WBC clumps, RBC, or bacteria), suggests urethritis or cystitis. Pyuria is usually absent in vaginitis. The presence of squamous epithelial cells indicates poor clean-catch technique and markedly reduces the diagnostic value of the test.

### **Gram stain**

A Gram stain of midstream, clean-catch uncentrifuged urine showing  $>1$  organism/oil immersion field (1000X) suggests bacterial urinary tract infection (UTI), but the absence of bacteria does not exclude UTI.

### **Urine culture**

Women without evidence of vaginitis or cervicitis on examination, but with pyuria and bacteriuria usually have a bacterial bladder infection. It is reasonable to manage such women *without* a urine culture if they

- have no history of previous urinary tract infections in the last 6 months,
- have not recently taken antibiotics, or
- have no known urologic abnormalities or kidney stones.

If urine cultures are obtained,  $\geq 10^3$  colony count of a single uropathogenic organism (*E. coli*, *S. Saprophyticus*, *Proteus* spp.) support the diagnosis of UTI. Mixed organisms on urine culture indicate a possible contaminated specimen, but can still indicate UTI if there is a predominant organism with  $\geq 10^3$  colony count.

If the microscopic examination of the urine reveals only pyuria but not bacteriuria, the patient may have urethral infection with chlamydia or gonococci, but could alternatively have a bacterial urinary infection with lower counts of *E. coli* not visible on Gram stain. Chlamydial and gonococcal tests should be obtained from the cervix and urethra, and a urine culture should be done. If the patient has any lesions suggestive of herpes, both the lesions and the urethra should be cultured for HSV.

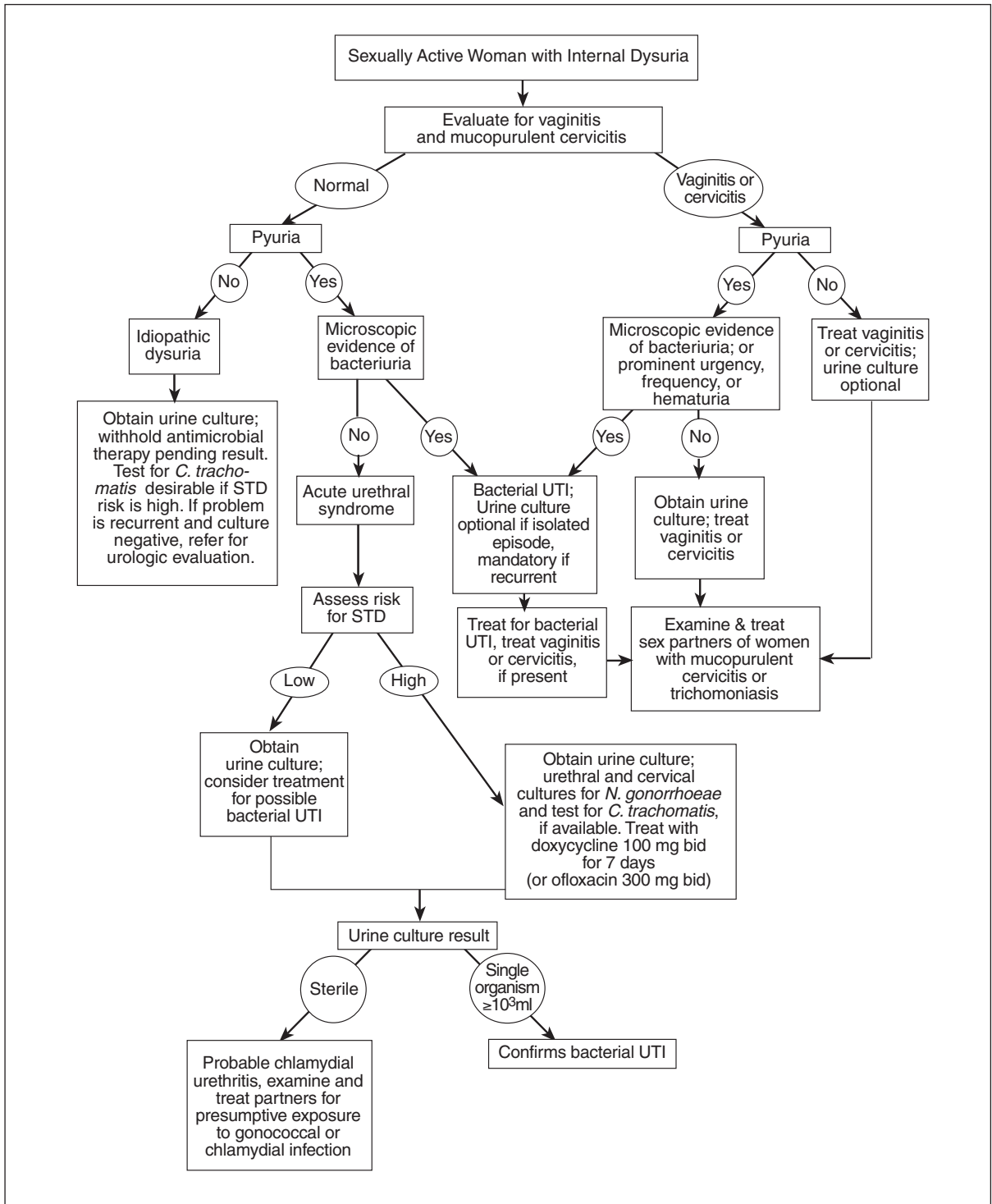
## **DIFFERENTIAL DIAGNOSIS**

The differential diagnoses primarily include urethritis, cystitis, and vaginitis (see Table 5-1 and Figure 5-1); upper urogenital tract diseases, such as pyelonephritis, endometritis, and salpingitis may occasionally also be present.

**TABLE 5-1****DIAGNOSTIC CHARACTERISTICS OF LOWER GENITOURINARY TRACT INFECTIONS IN WOMEN**

	<b>CYSTITIS (UTI)</b>	<b>URETHRITIS</b>	<b>VAGINITIS/ CERVICITIS*</b>
<b>HISTORY</b>	“Internal” dysuria, urgency, frequency, gross hematuria  Acute onset Short duration (<4 days)  Previous cystitis or hematuria; suprapubic or low back pain	“Internal” dysuria  Gradual onset Long duration (>7 days)	“External” dysuria  Vaginal discharge or odor, vulvar itching  ± Dyspareunia
<b>EXAM</b>	Suprapubic or bladder tenderness	Genital exam usually normal except urethral erythema / exudate Cervicitis often present	Candidal, trichomonal, or bacterial vaginosis; see Chapter 6
<b>URINALYSIS</b>	Pyuria; bacteriuria in most cases, hematuria in half of cases	Pyuria; no bacteriuria; no hematuria	No pyuria
<b>GRAM STAIN</b>	> 1 organism/1000x (uncentrifuged)		
<b>URINE CULTURES</b>	≥10 <sup>3</sup> /ml/single organism	Negative	Negative
<b>URETHRAL/ CERVICAL CULTURE</b>	Negative	Positive for CT, GC, HSV	Negative

\* See Table 6-1 and Chapter 6 for further discussion of vaginitis and Chapter 7 for cervicitis.



Adapted with permission by McGraw-Hill Book Company from Wilson, et al., *Harrison's Principles of Internal Medicine*, 11th edition; copyright 1987 by McGraw-Hill.

**Figure 5-1**  
Algorithm for management of sexually active woman with dysuria

## TREATMENT

For a more detailed discussion of these regimens and other treatment considerations, please refer to the CDC STD Treatment Guidelines at <http://www.cdc.gov/std/treatment/>.

The drugs and doses are the same for men and women.

### **Urethritis and Cystitis in Women Suspected acute cystitis (UTI)**

(isolated episode)

#### **Recommended regimen**

- TMP-SMX: double strength tablets PO bid for 3 days

#### **Alternative regimens**

Any of the following:

- Ciprofloxacin 100-250 mg PO bid or 500mg qd for 3 days
- Ofloxacin 300 mg PO bid for 3 days
- Macrodantin 100 mg bid for 3 days
- Levofloxacin 250 mg PO qd for 3 days

#### **Presumed chlamydial or gonococcal urethritis**

If suspicious for either of these is present, see treatment recommendations for these infections.

If the risk for STD is low; treatment for bacterial urinary tract infection (UTI) should be given for suspected acute cystitis (above).

For women with recent history of UTI, recent antibiotic exposure, urologic abnormalities, or kidney stones, treatment should only be undertaken if urine culture and antibiotic sensitivities are available.

## FOLLOW-UP

- Patients who have no pyuria observed should be re-examined in 2 to 5 days if symptoms persist.
- See follow-up regimens in specific chapters for women treated for vaginitis or cervicitis.
- Women given empiric antimicrobials for acute cystitis should return PRN if symptoms persist or recur.

## SEQUELAE

Delay in treatment or inappropriate treatment of cystitis may lead to development of acute pyelonephritis. Untreated lower genital tract infection with *C. trachomatis* or *N. gonorrhoeae* may lead to endometritis or salpingitis.